

GUEST EDITORS' PREFACE

Special Issue on the Complexity of Multivariate Problems

On October 4–8, 1999, sixty scholars from 16 countries met at Hong Kong Baptist University for the Workshop on the Complexity of Multivariate Problems. This special issue of the *Journal of Complexity* contains selected papers based on the talks given at this workshop.

Plans for this workshop began in October 1997 when Stephen Smale and Felipe Cucker of the City University of Hong Kong invited several mathematicians to join them in organizing a special Fall 1999 Semester on the Foundations of Computational Mathematics in Hong Kong. It was

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problems.

The first major step in preparing for the workshop was to secure excellent plenary speakers. The following scholars accepted our invitation: Kai-Tai Fang, Hong Kong Baptist University; Stefan Heinrich, University of Kaiserslautern; Harald Niederreiter, Austrian Academy of Sciences; Erich Novak, Universität Erlangen–Nürnberg; Art Owen, Stanford University; Ian Sloan, University of New South Wales; Shu Tezuka, IBM Corporation Tokyo; Ren-Hong Wang, Dalian University of Technology; and Grzegorz Wasilkowski, University of Kentucky. In addition to these nine, we felt obliged to report on our own recent research. Plenary speakers were chosen whose expertise focused on multivariate approximation and integration, the emphases of this workshop. However, these experts came from diverse backgrounds—numerical analysis, number theory, computer science, and statistics. This reflected our desire for an interdisciplinary meeting. We are grateful to them for providing the vital core of the workshop program.

Scientific meetings incur substantial expense. Several institutions saw the benefits of this meeting and donated generously to make it a reality. Our financial sponsors were the City University of Hong Kong, the Epson Foundation, Hong Kong Baptist University, and the K. C. Wong Education Foundation. Because of their donations we were able to partially support



the expenses of the plenary speakers and those participants having financial difficulties. In particular, the K. C. Wong Education Foundation provided substantial financial support for the delegation from the Chinese mainland. The Epson Foundation supported the workshop banquet and a special half-day session on finance problems.

Logistical arrangements for the workshop were undertaken with the valuable assistance of Gang Wei and several clerical and technical staff in the Department of Mathematics. Individuals from other departments in the university also provided needed help. We greatly appreciate the efforts of all of those who did their best to ensure that the workshop would run as smoothly as possible.

One of the purposes of having such a workshop in Hong Kong was to facilitate the participation of scholars from the Chinese mainland. We wanted to provide more opportunities for academic interaction between mainland and overseas scholars that would be mutually beneficial. Ren-Hong Wang from Dalian University of Technology promoted the workshop throughout the Chinese mainland and encouraged many mainland scholars to attend.

The workshop was held in the Lam Woo International Conference Centre of Hong Kong Baptist University. The workshop was opened by Jerry W. Barrett, the university's academic vice-president. In addition to the 11 plenary talks, there were 40 contributed talks. The topics of these talks included approximation, integration, integral equations, optimization, low discrepancy designs, and computational finance. Because of the importance of this last topic, a special half-day session, chaired by Joseph F. Traub of Columbia University, was devoted to it.

Some speakers decided to submit their work for publication elsewhere, but a number of speakers submitted papers based on their talks for inclusion in this special issue. All manuscripts submitted went through the normal review process of this journal, and 17 of them were accepted for publication. We thank the authors for their care in preparing their articles and the many referees who diligently reviewed them. The articles in this volume reflect the diversity and vitality of research into the complexity of multi-variate problems. Not only have the authors solved some long-standing problems, but new problems have been suggested. Our hope is that this volume not only records some of the significant advances in complexity research but also serves to draw others into this field.

Fred J. Hickernell

Henryk Woźniakowski

Workshop Organizers and Guest Editors